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मानक

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“जानने का अधिकार, जीने का अधिकार”

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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8271-2-11 (1984): Quartz crystal units used for frequency control and selection, Part 2: Series AA for oscillators, Section 11: Quartz crystal unit type AA-11 [LITD 5: Semiconductor and Other Electronic Components and Devices]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard



SPECIFICATION FOR QUARTZ CRYSTAL UNITS
USED FOR FREQUENCY CONTROL AND SELECTION
PART 2 SERIES AA FOR OSCILLATORS
Section 11 Quartz Crystal Unit Type AA-11

0. General — This standard shall be read in conjunction with IS : 8271 (Part 1)-1981 'Specification for quartz crystal units used for frequency control and selection: Part 1 General requirements and tests (first revision)'.

1. Outline and Dimensions — Holder outline shall conform to type AA (see Sheet 1A of IS : 4570-1968 Specification for crystal holders).

2. Marking — See 8 of IS : 8271 (Part 1)-1981.

3. Construction and Workmanship — See 7 of IS : 8271 (Part 1)-1981.

4. Test Schedule and Detail Requirements

4.1 General Conditions for Test — See 9.2 of IS : 8217 (Part 1)-1981.

4.2 Test Schedule — The sequence and grouping of type, routine and acceptance tests shall be in accordance with 9.1 of IS : 8271 (Part 1)-1981.

4.3 Detail Requirements — The detail requirements applicable to this particular type of crystal unit shall be as specified in Table 1.

TABLE 1 DETAIL REQUIREMENTS OF QUARTZ CRYSTAL UNITS TYPE AA-11

SI No.	Characteristics	Requirements
i)	Type of Holder	AA (See 1)
ii)	Frequency range	200 to 555 kHz
iii)	Frequency tolerances :	
a)	Primary operating temperature range	± 100 ppm
b)	Secondary operating temperature range	± 150 ppm
iv)	Resonance resistance	see Table 2
v)	Mode of oscillation	Fundamental
vi)	Load capacitance	20.0 ± 0.5 pF
vii)	Operating temperature ranges :	
a)	Primary	-40°C to $+70^{\circ}\text{C}$
b)	Secondary	-55°C to $+40^{\circ}\text{C}$ and $+70^{\circ}\text{C}$ to $+90^{\circ}\text{C}$
viii)	Test set, calibration values and rated drive level	see Table 3
ix)	Shock [in accordance with 9.15 (Severity A) of IS : 8271 (Part 1) - 1981] :	
a)	Frequency change permitted	± 5 ppm
b)	Resonance resistance change permitted	± 15 percent
x)	Vibration [in accordance with 9.16.1 (Severity A) of IS : 8271 (Part 1) - 1981] :	
a)	Frequency change permitted	± 5 ppm
b)	Resonance resistance change permitted	± 15 percent
xi)	Temperature cycling :	
a)	Frequency change permitted	± 5 ppm
b)	Resonance resistance change permitted	± 15 percent
xii)	Temperature run :	
a)	Frequency change permitted	± 5 ppm
b)	Resonance resistance change permitted	± 15 percent
xiii)	Bond strength	see Table 4

Adopted 24 August 1984

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TABLE 2 RESONANCE RESISTANCE

[Table 1, Item (iv)]

Frequency Range MHz (1)	Maximum Resonance Resistance ohms (2)
From 200 to 225	5 300
Over 225 to 275	6 000
Over 275 to 325	6 500
Over 325 to 375	7 000
Over 375 to 425	7 500
Over 425 to 475	8 000
Over 475 to 500	8 500
Over 500 to 555	9 000

TABLE 3 TEST SET, CALIBRATION VALUES AND RATED DRIVE LEVEL

[Table 1, Item (viii)]

SI No.	Frequency Range	Calibration Values		Rated Drive Level mW	Test Set
		Resistance ohms	Resistor Voltage Drop volts		
(1)	(2)	(3)	(4)	(5)	(6)
i.	From 200 to 225	3 700	2.72	2.0 ± 0.4	TS-710/TSM
ii.	Over 225 to 275	4 200	2.90		
iii.	Over 275 to 325	4 600	3.03		
iv.	Over 325 to 375	4 900	3.13		
v.	Over 375 to 425	5 300	3.26		
vi.	Over 425 to 475	5 600	3.35		
vii.	Over 475 to 500	6 000	3.46		
viii.	Over 500 to 555	3 500	2.65		

TABLE 4 BOND STRENGTH

[Table 1, Item (xiii)]

Frequency Range kHz (1)	Minimum Bond Strength N (2)
From 200 to 250	7
Over 250 to 320	5
Over 320 to 370	4
Over 370 to 435	3
Over 435 to 555	2.5

EXPLANATORY NOTE

This Standard (Part 2/Sec 11) covers the requirements of crystal unit, quartz, style QC-06 of JSS 50903 (1971) 'Detail specification for crystal unit, quartz, styles QC-05, QC-06, QC-07 and QC-08', issued by the Directorate Standardization, Ministry of Defence (India).